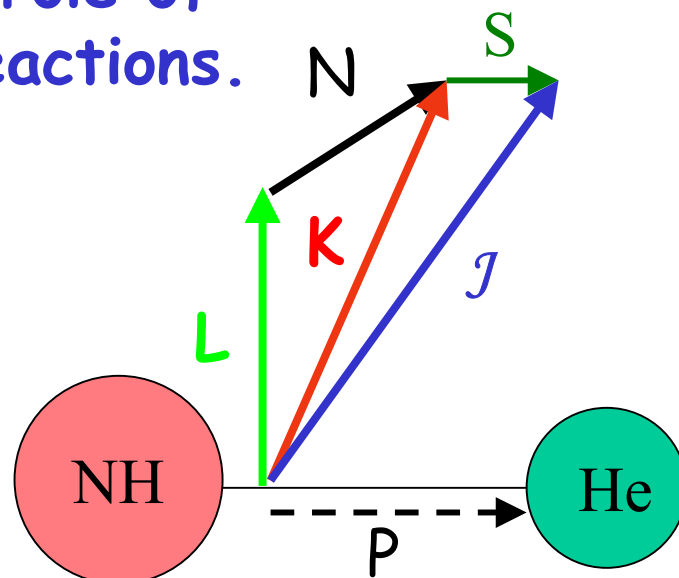


# Spectroscopic investigation of the role of long-range forces in elementary reactions.

Michael Heaven, Emory University,  
CHE-0213313.

The NH radical has been identified as a promising prototype for studies of ultra-cold molecules. The large rotational constant and magnetic moment of NH(X) are well suited for cooling techniques that combine He buffer gas relaxation with magnetic trapping. However, the efficiency of trapping will be dependent on the NH(X)-He interaction potential.

NH-He has been generated in a jet expansion at 1.5 K and characterized using the  $A^3\Pi-X^3\Sigma^-$  electronic transition. The NH(X)-He rotational constant ( $0.333\text{ cm}^{-1}$ ) and binding energy (approximately  $5\text{ cm}^{-1}$ ) were found to be in good agreement with values calculated using an ab initio potential energy surface.



Rotational energy levels

L		J		P
	+	2	F <sub>1</sub>	1
1	≡	1	F <sub>2</sub>	1
		0	F <sub>3</sub>	0
0	-	1	F <sub>1</sub>	1